IMAGE PROCESSING METHOD OF WELD DISCONTINUITIES CAPTURED BY DIGITAL RADIOGRAPHY X-RAY USING MATLAB AND GUI

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ABSTRACT

Radiography is one of the Non Destructive Testing (NDT) methods to visualize the inner structure of macroscopic samples. Development of the technology in engineering fields made the people enhanced the capabilities of the systems in order to reduce the cost, correct interpretation and also fast delivery feedback. The conventional in radiography is used film radiography and the newest is used filmless radiography or called digital radiography. The image processing is widely used in radiography to increase the quality of the image as well as to help the interpreter in analyzing welding discontinuity. The aim of this study is to develop analyzing tool to identify the welding discontinuities on welded part captured by digital radiography X-ray machine (ndt analyzer) at FKM's lab. The acquiring image will be improved using this analyzing tool so called "Advanced Defect Analyzer Tool (ADAT)". The results of using the ADAT will indicate the improvement image quality in shows the clear defect region and identify correct types of welding discontinuities. One of the advantages of ADAT is user friendly by providing the variable options of processing image for the user to observe the region of image. ADAT is fully developed using MATLAB 7.5(R2007b). In a first stage, image processing techniques, including *noise* reduction, contrast enhancement, and *edge* detection were investigated to help recognizing the weld discontinuity region of the specimen. For the second stage, the Graphical User Interface (GUI) was developed by compiling all the image processing methods. In the last stage, additional information that related to image processing and digital radiography X-ray are compiled into the tool (ADAT).

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